

## **REMARKS/ARGUMENTS**

Claims 1-68 are currently pending in the above application. For at least the reasons set forth below, Applicants submit that the claims are patentably distinguishable over the cited art.

Claims 1-20, 22-42, and 57-67 stand rejected under 35 U.S.C. § 102 (e) as being anticipated by US PGPUB.2004/0076910 to Rutter et al. (Rutter).

Claims 1–68 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over PGPUB. 2004/0076910 to Rutter.

Applicants note that Rutter has a priority date of April 6, 2002. As declared by Karen Schlicht and Mario Reybrouck in the attached declaration under 35 U.S.C. §1.131(b), the present invention antedates the priority date of Rutter. Therefore, Rutter is not a proper prior art reference under 102(e) or 103(a). As such, Applicants request reconsideration and withdrawal of the above § 102 and 103 rejections based on Rutter.

Claims 1, 22, and 57 stand rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,159,646 to Jeon et al. (Jeon), in view of U.S. Patent 6,200,724 to Namiki et. al. (Namiki).

Claim 1 is directed to a rework process for removing an imaging layer from a substrate stack. The stack includes a substrate, an underlayer adjacent to the substrate, and an imaging layer that has silicon adjacent to the underlayer. The process involves the steps of: (a) contacting the substrate stack with an imaging layer removal solvent; followed by (b) removing the imaging layer with the imaging layer removal solvent thereby forming a substrate/underlayer stack. The imaging layer removal solvent for this process is selected from glycol ethers, ketones, esters, lactates, dimethylsulfoxide (DMSO), dimethylformamide (DMF), tetrahydrofuran (THF), methyl tetrahydrofuran,

dioxane, tetrahydropyran, ethyl tetrahydropyran-4-acetate, methyl tetrahydropyran-4-methanol, tetrahydropyran-4-one, n-butyl acetate, n-amyl acetate, and any combinations of those solvents; and finally (c) removing the imaging layer removal solvent from the substrate/underlayer stack after the imaging layer is removed.

Claim 22 is directed to a lithographic imaging rework process for correcting one or more defects on an imaging layer on a substrate stack. The stack includes a substrate, an underlayer adjacent to the substrate, and an imaging layer that has silicon adjacent to the underlayer. The process involves the steps of: (a) contacting the substrate stack with an imaging layer removal solvent is selected from glycol ethers, ketones, esters, lactates, dimethylsulfoxide (DMSO), dimethylformamide (DMF), tetrahydrofuran (THF), methyl tetrahydrofuran, dioxane, tetrahydropyran, ethyl tetrahydropyran-4-acetate, methyl tetrahydropyran-4-methanol, tetrahydropyran-4-one, n-butyl acetate, n-amyl acetate, and any combinations of these solvents; (b) removing the imaging layer with the imaging layer removal solvent, thereby forming a substrate/underlayer stack; (c) removing the imaging layer removal solvent from the substrate/underlayer stack after the imaging layer is removed; (e) coating the substrate/underlayer stack with a new imaging layer; (e) exposing the new imaging layer to radiation; and (f) developing the new imaging layer.

Claim 57 is directed to a rework process for removing an imaging layer from a substrate stack. The stack includes a substrate, an underlayer adjacent to the substrate, and an imaging layer that has silicon adjacent to the underlayer. The process involves the steps of: (a) contacting the substrate stack with an imaging layer removal solvent; (b) removing the imaging layer with the imaging layer removal solvent thereby forming a substrate/underlayer stack, wherein the imaging layer removal solvent is selected from glycol ethers, ketones, esters, lactates, dimethylsulfoxide (DMSO), dimethylformamide (DMF), tetrahydrofuran (THF), methyl tetrahydrofuran, dioxane, tetrahydropyran, ethyl tetrahydropyran-4-acetate, methyl tetrahydropyran-4-methanol, tetrahydropyran-4-one, n-butyl acetate, n-amyl acetate, and any combination of those solvents; (c) rinsing the imaging layer removal solvent from the substrate/underlayer stack with a rinse solution

after the imaging layer is removed; and finally, (d) baking the substrate/underlayer stack to remove the rinse solution.

Jeon describes a thinner composition, a method, and a rework process for removing an entire photoresist layer where an etching failure occurs during photoetching. (Col. 3, lines 49-56).

Namiki describes a chemical amplification resist composition for forming resist patterns which comprises an alkali-soluble Si-containing base resin, a photoacid generator, and a dissolution inhibitor. (Col. 6, line 51-57).

The Action avers that Jeon discloses the conventional rework steps (Fig. 5D and 6-8) and organic solvents (Col. 3, lines 16-39.) of the present invention. Namiki is relied on to teach a CA photoresist (Col. 6, line 43-60), a dissolution inhibitor, and a conventional negative tone resist of unexposed areas dissolved by an organic solvent. (Col. 18, lines 6-65).

While Jeon does not discuss Si-bearing resists, the Action alleges that it would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute Namiki's Si-bearing resist with the improved-dissolution inhibitor in Jeon's process, because the novel resist is easily soluble in conventional organic solvents, including ethyl-lactate used by Jeon to provide fine patterns with high resolution (Col. 29, line 58-30 [sic] and Col. 14).

In response, Applicants submit that the Action fails to establish a *prima facie* case of obviousness under 35 U.S.C. §103 (a).

To establish a *prima facie* case of obviousness three basic criteria must be met. First, there must be a suggestion or motivation in either of the references, or in the knowledge generally available in the art, to modify the reference or teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference, or

(references when combined), must teach or suggest all the claim limitations. Moreover, the teaching or suggestion to make the claimed combination and reasonable expectation of success must be found in the prior art and not based on the applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438(Fed. Cir. 1991). MPEP 706.02(j).

Here, Jeon fails to disclose or suggest all of the limitations of the claimed invention. For example, Jeon fails to disclose Si-bearing resists, or a rework method capable of removing a patterned or unpatterned photo imageable layer without significant damage, film loss, or other alteration of the underlying layer. Jeon's disclosed method is directed to the *complete* removal of the photoresist. (Col. 1, lines 62 - 67).

Applicants respectfully submit that the above deficiencies are not cured by Namiki which also fails<sup>to</sup> teach a rework method for the removal of a Si-bearing, let alone any photoimaging layer while maintaining the presence of the underlying layer, contrary to the claimed invention.

Therefore, clearly neither reference, taken alone or in combination discloses or suggests each and every claim limitation of the present invention. Absent such disclosure in either reference, the Action fails to make the requisite *prima facie* case of obviousness. Accordingly, the claimed invention is patentably distinguishable over the cited art. Reconsideration and withdrawal of the §103(a) rejection is respectfully requested.

Claim 1 stands rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent 5,964,951 to Yamamoto et al. (Yamamoto), in view of Namiki.

Claim 1 and Namiki are summarized above. Yamamoto describes a rinsing solution for a lithographic process, which comprises a homogeneous solution of a water-soluble organic solvent and water. The solution is used as a solvent for resists or antireflective layers. (Col. 2. Line 9-16).

Yamamoto is relied on, by the Action, to teach a stripping solution for removing resists from wafers and discloses steps for forming an antireflective underlayer (ARC) on the substrate which coats a photoresist and patterning on the resist. The Action notes that both chemically amplified positive and negative tone resists may be stripped and suggests that the combination of Namiki's Silicon CA-photo resist with the dissolution inhibitor in Yamamoto's process, would have been obvious to one of ordinary skill in the art because the CA-photo resist is easily soluble in conventional organic solvents.

In that respect, the Action fails to set out a *prima facie* case of obviousness for the above combination of prior art references. Applicants respectfully submit that Yamamoto fails to disclose or suggest all of the limitations of the claimed invention. Notably, Yamamoto fails to disclose Si-bearing resists, or a rework method capable of removing a patterned or unpatterned photo imageable layer without significant damage, film loss, or other alteration of the underlying layer, as in the claimed invention. To the contrary, the processes of Yamamoto remove both antireflective coatings and resist coating, whereas the rework process of the claimed invention removes only the top coating without damaging the undercoat.

As noted above, this deficiency is not cured by Namiki which fails teach any rework method for the removal of a Si-bearing or non Si-bearing containing photoimaging layers while maintaining the presence of the underlying layer, contrary to the claimed invention. Therefore, neither Yamamoto nor Namiki, taken alone or in combination, disclose or suggest all of the claimed limitations of the present invention.

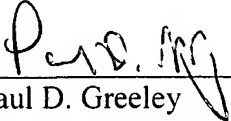
Accordingly, Applicants respectfully submit that claim 1 is patentably distinguishable over the cited art taken alone or in combination. Reconsideration and withdrawal of the §103(a) rejection is respectfully requested.

Applicants respectfully submit that claims 1 through 68 are patentably distinguishable over all of the cited art, taken alone or in combination, as none of the

cited references disclose or suggest the claimed invention. As such, reconsideration and withdrawal of all of the rejections of claims 1 through 68 are respectfully requested.

Respectfully submitted,

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